EXHIBIT 4

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

CHRIMAR SYSTEMS, INC., ***et al.,*** **Plaintiffs,** **v.** **ALCATEL-LUCENT, INC.,** ***et al.,*** **Defendants.**	**Case No. 6:15-CV-163-JDL** **LEAD CASE**
CHRIMAR SYSTEMS, INC., ***et al.,*** **Plaintiffs,** **v.** **AMX** **Defendant.**	**Case No. 6:15-CV-164-JDL**

DECLARATION OF RICH SEIFERT

INTRODUCTION

1. I am an expert in the field of communications systems, and have been retained by McDermott, Will & Emery, representing Defendant AMX and by Williams Morgan, P.C., representing Defendants Alcatel-Lucent USA, Inc., Alcatel-Lucent Holdings, Inc., and ALE USA Inc., to analyze, render opinions, and/or provide expert testimony regarding the meaning of certain terms in U.S. Patent Nos. 8,155,012 ("the '012 patent), 8,942,107 ("the '107 patent), 8,902,760 ("the '760 patent"), and 9,019,838 ("the '838 patent") (collectively, the Patents-in-Suit) as asserted by Chrimar Systems, Inc., *et al*. (collectively, hereinafter "Chrimar" or "Plaintiff").

2. I am being compensated at my usual rate of $400 per hour for the time spent by me in connection with this case. This compensation is not contingent upon my opinions or the outcome of the case. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would competently testify to them under oath.

3. This declaration is responsive to the December 17, 2015 declaration of Les Baxter on behalf of Plaintiffs in which he provides his conclusions as to the meaning of certain terms.

4. This declaration also provides my opinions as to the indefiniteness of certain claims.

5. I incorporate by reference my expert report regarding the invalidity of certain asserted claims of the '012 patent dated Mar 10, 2015, submitted in prior case nos. 13-cv-880-JDL and 13-cv-881-JDL, which includes, *inter alia*, my background and qualifications, previous documents reviewed, statements of legal principles, claim construction, and my opinion regarding a person of ordinary skill in the art. For convenience, some of this material is reproduced below.

BACKGROUND/QUALIFICATIONS

6. I am currently the President of Networks & Communications Consulting in Los Gatos, California. I received a Bachelor of Engineering (Electrical Engineering) degree from the City College of New York in 1976. I received a Master of Science (Electrical Engineering) degree in 1979 from the Worcester Polytechnic Institute, a Master of Business Administration degree in 1984 from Clark University, and a Juris Doctor degree in 2006 from Santa Clara University. I have over 45 years of experience in computer and communications technology, and have worked for the past 35 years on the architecture and design of data communications networks and networking products. My curriculum vitae is attached hereto as Exhibit A, which includes lists of publications I have authored and legal cases in which I have been involved.

DOCUMENTS AND MATERIALS CONSIDERED

7. A list of additional materials (beyond those listed in my earlier report) that I have considered in rendering the opinions expressed herein is attached as Exhibit B. In forming my opinions, I have also relied on my experience and education.

LEGAL PRINCIPLES

8. I am not a patent attorney and offer no opinions on the law. However, I have been informed by counsel of the legal standards that apply, and I have applied them in arriving at my conclusions.

9. I understand that a patent is invalid for indefiniteness if its claims, read in light of the intrinsic record, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

10. I understand that patent claims have their plain and ordinary meaning to one of skill in the art when read in the context of the intrinsic record unless the patentee has acted as his own lexicographer or disclaimed some scope of the claim.

PRIOR CLAIM CONSTRUCTION

11. My understanding is that some of the terms in the claims of the '012 patent were construed by the Court in case nos. 13-cv-880-JDL and 13-cv-881-JDL, as shown below. *See, generally,* Memorandum Opinion and Order, dated Oct. 22, 2014 (the "10/22/14 Order"), Memorandum Opinion and Order dated Jan. 8, 2015 (the "1/8/15 Order"), and Memorandum Opinion and Order dated Jan. 16, 2015 (the "1/16/15 Order").

Claim Term	**Construction**
"distinguishing information about the piece of Ethernet terminal equipment" (Claim 31)	"information to distinguish the piece of Ethernet data terminal equipment from at least one other piece of Ethernet data terminal equipment" 10/22/14 Order at 15; 1/16/15 Order at 3.
"to distinguish the piece of terminal equipment" (Claim 67)	"to distinguish the piece of data terminal equipment having an Ethernet connector from at least one other piece of terminal equipment having an Ethernet connector" 10/22/14 Order at 15; 1/16/15 Order at 3.
"impedance" (Claims 31, 35, 67, 77)	"opposition to the flow of current" 1/16/15 Order at 3.
"terminal equipment" (Claims 67, 106)	"device at which data transmission can originate or terminate" 1/16/15 Order at 4.
"Ethernet data terminal equipment" (Claims 31, 35, 43, 55)	"device at which data transmission can originate or terminate and that is capable of Ethernet communication" 1/16/15 Order at 4.
"[A]n adapted piece of Ethernet data	These preambles *are* limiting and have their

terminal equipment" (Claim 31) and "[A] method for adapting a piece of terminal equipment" (Claim 67)	plain and ordinary meaning. 1/16/15 Order at 4 (emphasis in original).
"arranging impedance within the at least one path" (Claim 67)	Plain meaning. 1/16/15 Order at 14.
"wherein distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path" (Claim 31)	Plain meaning. 1/16/15 Order at 16.

PERSON OF ORDINARY SKILL IN THE ART

12. I have been informed and understand that the following criteria are useful in determining the level of ordinary skill in the art with respect to a given patent: (a) the educational level of the inventor; (b) the type of problems encountered in the art; (c) prior art solutions to those problems; (d) rapidity with which innovations are made; (e) sophistication of the technology in the art; and (f) the educational level of active workers in the field. A person of ordinary skill in the art with respect to the asserted patent would have had at least a B.S. degree in electrical engineering or computer science, or the equivalent, and at least three years of experience in the design of network communications products.

13. Specifically, such a person would be familiar with, *inter alia*, data communications protocols, data communications standards (and standards under development at the time), and the behavior and use of common data communications products available on the market.

14. At the time of the filing of the Patents-in-Suit, through the time of the earliest claimed priority date of April 10, 1998, I was at least a person of ordinary skill in the art, and regularly worked with and supervised others at that level of skill.

ADMITTED PRIOR ART

(A) Ethernet Connectors

15. The Patents-in-Suit disclose and incorporate by reference U.S. Patent 5,406,260 (also assigned to Plaintiff Chrimar Systems, Inc., in the instant case) as relevant prior art. They state that the '260 patent had already disclosed:

> One method … is disclosed in U.S. Pat. No. 5,406,260 issued to Cummings, et al., (hereby incorporated by reference) which discusses a means for detecting the unauthorized removal of a networked device by injecting a low current power signal into each existing communications link. A sensor monitors the returning current flow and can thereby detect a removal of the equipment. This method provides a means to monitor the connection status of any networked electronic device thus providing an effect theft detection/deterrent system."
>
> *See, e.g.*, '012 Patent, 2:12-19.

16. Coupling a path across specific contacts of an Ethernet connector comprising 8 contacts (numbered 1 through 8) was also known to persons of ordinary skill. The IEEE 802.3i-1990 specification (10BASE-T) discloses such an Ethernet connector, with eight contacts numbered 1 through 8:

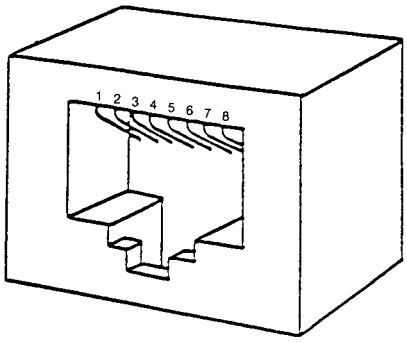

Figure 14–20—MAU MDI connect

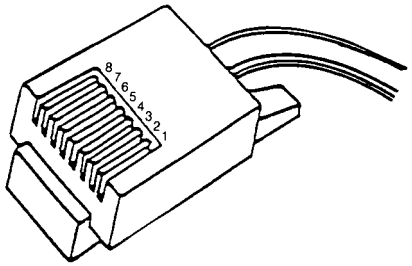

Figure 14–21—Twisted-pair link segment connector

IEEE 802.3i-1990 Figures 14-20 and 14-21: MAU MDI Connect and Twisted-pair Link Segment Connector

IEEE 802.3i-1990 at 52 (§14.5.2); *see also* IEEE 802.3-1993 at 268.

17. Mr. Baxter has conceded that having a path coupled across selected contacts of a given Ethernet connector was already known to persons of ordinary skill and was not part of any inventive element of claim 31 of the '012 patent.

> Q: And you say a person would understand what it means to have a path coupled between contacts of an Ethernet connector, correct?
>
> A: Mm-hmm.
>
> …
>
> Q: But you're not asserting that the inventors invented having a path across the two contacts, right?
>
> A: No.
>
> …
>
> Q: …Would a person of ordinary skill in the art at the date of filing of the earliest patent application or the date of invention have already seen something similar to the schematic in paragraph 77?
>
> A: Whether they would have seen this exact schematic or not, I don't know, but certainly you would be familiar with what the Ethernet connector is, what an impedance is, and what a path is. So I think those are very familiar concepts to anyone of skill in the art at that time and since Ethernet, you know, twisted pairing had been around for some years, certainly they would have seen schematics that had connections across the contacts of a modular jack.

Baxter October 22, 2014 Deposition at 114-116 (objections omitted).

(B) Ohm's Law

18. Voltage (V), current (I), and impedance (Z) are interrelated as expressed by Ohm's law. *See, generally,* Crow at 109-126. When analyzing circuits carrying DC current, impedance may be simplified to resistance (R).[3]

19. Ohm's Law states that Voltage (V) = Current (I) x Resistance (R), i.e., V = I x R. Crow at 112.

20. Applying Ohm's law, one could maintain a constant voltage, and change the current by changing the resistance. Any increase in current would be due to a decrease in the resistance, and vice-versa. Similarly, for a constant resistance, Ohm's law says that you can change the current by changing the applied voltage.

21. Any conductive path *inherently* has the capability to draw different magnitudes of current because it is governed by the principles of Ohm's law. One can always apply voltages of different magnitudes to yield currents of different magnitudes. Or, one can simply change the impedance (resistance) within the path to produce a different magnitude of current.

22. Direct current (DC) is a current that does not change in polarity. While the magnitude of the current may vary, the net flow of electric charge does not change direction in a DC circuit.

23. Alternating current (AC) is a current that does change in polarity. Over time, the net flow of electric charge changes directions, either periodically or aperiodically.

24. In the real-world environment for Ethernet data terminal equipment (e.g., the end devices claimed in the Patents-in-Suit), any DC current drawn by the device will always correlate to a draw of power by the device, related to that current. In other

[3] In the general case of combined AC/DC circuits, voltage, current, and impedance are all vector quantities requiring the use of complex numbers in the mathematical analysis. Since the claims of the Patents-in-Suit relate to DC currents, we can simplify the analysis and consider voltage, current, and resistance to be scalars with a given value.

words, current flow across Ethernet cable wiring, through the recited contacts of an Ethernet connector, and through a conductive path within circuitry in a device will always consume power. This is because each of these elements will have some appreciable resistance.

25. In a DC circuit, power (P) is defined as the voltage (V) applied, multiplied by the resulting current (I), i.e. P = V x I. Crow at 184. Combining Ohm's law with the power equation, $P = V \times I = (I \times R) \times I = I^2 \times R$. Because R will always have a non-zero value, a device that is drawing current will always consume power as well.

(C) Ethernet Networks and Naming Conventions

26. 10BASE-T networks use twisted-pair wiring to send signals. *See, e.g.,* Seifert Report at ¶ 151. The same connector discussed above (RJ-45) is used to connect the communications cable to the network circuitry inside the end device. On each pair used, an isolation transformer blocks continuous DC current from passing across the transformer, but AC currents (representing digital data) or DC pulses can pass across the magnetic coupling between the two coils in the isolation transformer.

27. The term "Base-T" standing alone is not used in the IEEE specification. The only use of the term is in the context of an entire designation, e.g., 10BASE-T (or 100BASE-TX, 1000BASE-T, etc.)

28. The IEEE Standards introduced shorthand names for the the various Ethernet physical media systems. A complete list of these shorthand names (as of 1998) can be found in Rich Seifert, *Gigabit Ethernet: Technology and Applications for High-Speed LANs* (Addison-Wesley 1998) at 15. There is no standard that is simply designated BASE-T (or "BaseT", as used in the Patents-in-Suit). Neither are all twisted-pair configurations designated as *X*BASE-T. For example, 1BASE5 is an Ethernet standard employing a single unshielded twisted pair, operating at 1 Mb/s, with a 500 meter

maximum length. Similarly, the AUI in 10BASE5 employs four twisted pairs, but has no designation of *X*BASE-T.

29. The naming convention for the variety of Ethernet media systems is explained below:

> In order to avoid having to say things like, "10 Mb/s Ethernet using two pairs of Category 3 unshielded twisted pair" or "Gigabit Ethernet on two optical fibers using longwave laser optics," the IEEE 802.3 standards committee developed a shorthand notation that allows us to refer to any particular standard implementation of Ethernet. Hence, a given flavor of Ethernet is referred to as
>
> n–signal–phy
>
> where
>
> ***n*** is the data rate in megabits per second (that is, 1, 10, 100, or 1000).
>
> ***signal*** indicates either BASE, if the signaling used on the channel is baseband (that is, the physical medium is dedicated to the Ethernet, with no other communications system sharing the medium) or BROAD, if the signaling is broadband (that is, the physical medium can simultaneously support Ethernet and other, possibly non-Ethernet services).[11]
>
> ***phy*** indicates the nature of the physical medium. In the first few systems to which this notation was applied, *phy* indicated the maximum length of a cable segment, in meters (rounded to the nearest 100 m). In later systems, this convention was dropped and *phy* became simply a code for the particular media type.[12]
>
> 12. As part of this change in conventions, codes using the "old style" (length) convention do not use a hyphen between the signaling type and the physical medium designation (for example, 10BASE5 and 10BASE2). Later designations always have a hyphen (for example, 10BASE-T and 100BASE-FX) to show the change in meaning. In addition, the signaling designation is always capitalized. Now you can impress your coworkers and correct your boss when he or she writes "10BaseT" instead of the strictly correct "10BASE-T." Please don't call me if doing this causes your career to veer in an undesirable direction.

Id. at 14

30. Thus, a person of ordinary skill in the art would not consider the term "Base-T" standing alone to define a type of Ethernet network. The definition is incomplete, nor is the naming or spelling correct. As discussed above, even if the *intent* is to provide a shorthand notation for Ethernet operation over twisted pair, the term is not inclusive of systems such as 1BASE5 or the AUI of 10BASE5. "Base-T" is simply not

a term of art as of any of the claimed priority dates. A person of ordinary skill would not know the complete set (if any) of Ethernet media systems to which it refers.

31. The specification only discusses 10BASE-T, and makes no mention of other systems that were known at the time, including 100BASE-TX, 100BASE-T4, and the emerging 1000BASE-T. Those other system operate at higher data rates, using lower signaling voltages and multi-level signaling, which results in significantly lower margins for error due to noise or inteference. *See, generally,* IEEE 802.3. This is further demonstrated by the fact that 10BASE-T allows for the use of (lower quality) Category 3 wiring where 100BASE-TX and 1000BASE-T require at least Category 5 wiring. *Id*.

32. Since the system of the Patents-in-Suit (and the prior art '260 patent, incorporated by reference) all depend on superimposing a low DC current onto the operational Ethernet cabling, without causing appreciable interference to the Ethernet signals, it is possible (if not likely) that the disclosed embodiments would not function correctly in the more constrained environment of those higher-speed systems. Thus, there is no reason for a person of ordinary skill to assume that the inventors meant their invention to include operation over any system other than 10BASE-T, the only one disclosed in the patents.

33. 100BASE-TX was formally adopted by the IEEE in 1995. 1000BASE-T was available in draft form at least as early as 1998 but was not formally adopted by the IEEE until 1999. A person of ordinary skill in the art would have known and had access to these standards and recognized the differences between the systems described in them vis-à-vis 10BASE-T. Limiting the recitation in the provisional and utility applications solely to 10BASE-T provides the only meaning for the term "BaseT," which appears to be a creation of the applicants or their attorney.

PROSECUTION HISTORY

34. The '012 patent was filed as application no. 12/239,001 on September 26, 2008. '012 Patent at 1. The '012 patent states that it is a continuation of an earlier application no. 10/668,708 filed on September 23, 2003, which is a continuation of application no. 09/370,430 filed on August 9, 1999, which is a continuation-in-part of a PCT filing PCT/US99/07846 filed on April 8, 1999, which claims the benefit of provisional application no. 60/081,279, filed on April 10, 1998. '012 Patent at 1.

35. The '107 patent was filed as application no. 13/370,918 on February 10, 2012 as a continuation of application no. 12/239,001, which issued as the '012 patent. The '760 patent was filed as application no. 13/615,755 on September 14, 2012 as a continuation of application no. 13/370,918, which issued as the '107 patent. The '838 patent was filed as application no. 13/615,734 on September 14, 2012 as a continuation of application no. 13/370,918, which issued as the '107 patent.

36. The specifications of the asserted patents all have the same figures, Summary of the Invention, and for the most part, detailed description sections. The Background of the Invention sections are also the same except for clerical changes to mention the additional related Chrimar patent filings. Where citations below are made to just one of the Patents-in-Suit, they should be considered applicable to all of them since the text and figures are substantially identical, even if line and column numbers may have changed due to re-pagination.

37. The specification acknowledges that the prior art '260 patent already discussed "injecting a low current power signal into each existing communications link" with a "sensor monitor[ing] the returning current flow [to] detect removal of equipment." '012 Patent, 2:12-19. The '260 patent is incorporated by reference. '012 Patent, 2:13-14.

38. The '260 patent discloses the use of 10BASE-T wiring. '260 Patent, 3:34-35. It also explains how DC current can be sent via a pair of wires:

> Wiring schemes of the 10BaseT type are commonly employed to provide data communication lines for electronic computer equipment. In accordance with conventional wiring approaches, data communications link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d. Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52. Each pair of transmit wires 44 and 46 along with isolation transformer 52 thereby form a current loop through the personal computer 12. . .
>
> '260 Patent, 3:35-48.
>
> [A]n isolation power supply 26 [] supplies a continuous direct current (DC) power signal to each of the current loops 50a through 50d.
>
> '260 Patent, 3:53-56.
>
> The power supply lines 28a through 28d each are electrically coupled to respective transmit wires 44a through 44d found within data communication link 14. Receive power lines 30a through 30d are likewise electrically coupled to transmit wires 46a through 46d also found within the data communication link 14. Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d.
>
> As a consequence, power supply line 28a continuously supplies a low current DC power signal to remote personal computer 12a via transmit wire 44a. The lower current power signal flows through an internal path provided by existing circuitry in personal computer 12a. The low current power signal then exits the remote personal computer 12a via transmit wire 46a and in turn is picked up by receive power line 30a. The lower current power signal is continuously supplied to current loops 50a through 50d at all times regardless of whether the computer network 10 or any personal computers 12a through 12d are operating or not. In addition, the very low current DC power signal is so small that it does not interfere with or adversely affect the operation of the associated computers 12a through 12d or computer network 10. To prevent the flow of DC current to or from hub 20, each of the transmit wires 44a through 44d and 46a through 46d are further coupled to DC blocking capacitors C_5 between each of the current loops 50a through 50d and hub 20. DC blocking capacitors C_5 thereby prevent unwanted DC current paths through hub 20.
>
> '260 Patent, 4:15-46.

39. Figure 2 of the '260 patent, highlighted to show a DC current path is shown below:

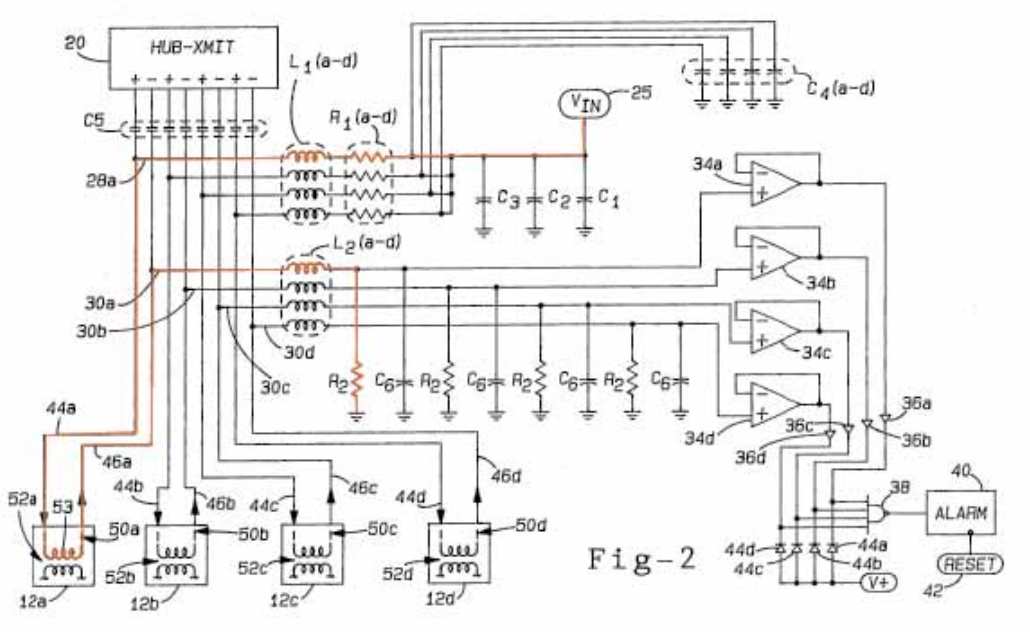

Fig-2

40. As shown above, the current loop path of the '260 patent uses the network side (top half) of the isolation transformer to pass DC current across one pair of transmit wires (44a and 46a). Elements in boxes 12a – 12d show corresponding transformers in the other remote devices in the system, and box 20 is a central hub. Otherwise all of which is shown in the figure relates to a device that sends a low DC current over the existing Ethernet wiring and detects whether the path is present or broken, by the presence (or lack of) current flow in the path.

41. The Patents-in-Suit use the above described scheme to detect the presence or removal of the Ethernet hub or the remote device.

42. The provisional application for the Patents-in-Suit included only block diagrams. What now constitute Figures 4-10 and 16-22 of the Patents-in-Suit were not present in the provisional application. Only the following sections of text in the Patents-in-Suit can be identified in the provisional application: 1:22-53; 1:66-2:2; 2:8-27; 2:30-32; 5:14-32; 5:30-40 ("central module" and "remote module" in Patents-in-Suit specification replacing "network identification receiver" and "network identification circuitry,"

respectively in provisional); 5:53-61; 6:1-3 ("remote module" replaces "network identification circuitry"); 6:7-13; 6:20-31 ("central module" and "remote module" in the '012 specification replacing "network identification receiver" and "network identification circuitry," respectively in provisional); 10:49-11:19 ("remote module" replaces "network identification circuitry").

43. Figures 4-10, 16-18 first appeared in application no. PCT/US99/07846 filed on April 8, 1999. The text in the '012 patent through column 12, line 61, with the exception of the text identified above, was first added in this filing.

44. Figures 19a, 19b, 20, 21, and 22, their accompanying descriptions in the "Brief Description of the Drawings" (4:24-35), and the text from col. 12, line 62 through col. 16, line 64 first appeared in continuation-in-part application no. 09/370,430, filed on August 9, 1999.

45. The specification explains that the "invention relates generally to computer networks and more particularly, to a network management and security system for managing, tracking, and identifying remotely located electronic equipment on the network." ('012 patent, 1:23-26.) The objective of the invention is to provide "a method for permanently identifying an asset by attaching an external or internal device to the asset and communicating with that device using existing network wiring or cabling. '012 Patent, 1:66-2-2.

46. The specification of the Patents-in-Suit distinguishes the invention from the '260 patent, stating, "It would, however, be desirable to provide a further means in which a networked device may also be identified by a unique identification number using the existing wiring or cabling as a means of communicating this information back to a central location. More particularly, it is desirable to provide a means for identification that feasibly employs the same cable (and if desired, the same wires in the cable) that normally carries high frequency data communications in an existing network." '012 Patent, 2:22-30.

47. The summary of the invention explains that the invention provides a communication system for "generating and monitoring data over a pre-existing wiring or cables that connect pieces of networked computer equipment to a network" and that "a remote module attached to the electronic equipment [] transmits information to a central module by impressing a low frequency signal on the wires of the cable." '012 Patent, 3:18-25.

48. The specification explains that the remote module to be attached to the asset being tracked requires power, which is provided to it by the central module by way of a DC power supply attached to a current loop passing through the network wiring to which remote module and the asset to be tracked are both connected. '012 Patent, 5:14-52.

49. The remote module receives the DC current supply and uses it to power the circuitry providing for a "preprogrammed unique identification number," which is then encoded via a modulation technique, such as Manchester encoding, which is then transmitted back, as a modulation of the DC current signal. '012 Patent, 6:9-30.

50. The other embodiments also contemplate the modulation of current to provide an information stream. '012 Patent, 8:49-57; 9:47-53; 10:9-25; 12:6-47; 14:21-28.

51. The embodiments disclosed in the specification all incorporate a remote module that draws DC current via one wire of a pair of wires connecting the Ethernet connectors of the central and remote module. The remote module returns the DC current via a different pair with the total DC current split between the two wires of that second pair. The variation in the relative amount of current in the two wires of the second pair provides the manner by which information (the encoded bits) are sent to the central module. *See* '012 Patent Figs. 6, 8, 10; and corresponding text.

52. The embodiments do not include any examples in which the (total) DC current drawn by the remote module from the central module provides any information about the remote module, as required by certain claims. *See, e.g.*, '107 Patent, Claim 1

("the piece of Ethernet terminal equipment to draw different magnitudes of DC current flow … to convey information about the piece of Ethernet terminal equipment.") They also do not disclose any examples in which a single magnitude of current drawn by the module is indicative of any feature of the remote module, other than what is already disclosed by the '260 patent.

53. The '012 patent was filed as an application on September 26, 2008. The claims as issued first appear in an amendment dated March 25, 2011. *See* '012 Patent Prosecution History, March 25, 2011 Response.

54. The '107 patent was filed as a continuation of the application that issued as the '012 patent.

55. The prosecution history of the '107 patent is informative as to the meaning of "at least one path coupled across for the purpose of drawing DC current," "current," and "current flow," and the meaning of the use of infinitives in the claims.

56. Claim 1 of the '107 patent as filed is reproduced below:

> 1. A piece of terminal equipment comprising:
>
> an Ethernet connector comprising contact 1 through contact 8, specific contacts of the Ethernet connector comprising at least contacts 1, 2, 3 and 6, at least one of the specific contacts of the Ethernet connector disposed to conduct at least one electrical signal into the piece of terminal equipment and at least another one of the specific contacts of the Ethernet connector disposed to conduct the at least one electrical signal out of the piece of terminal equipment; and
>
> circuitry arranged to utilize the at least one electrical signal to convey distinguishing information about the piece of terminal equipment even if the piece of terminal equipment is powered-off.

'107 Prosecution History at 41 (CMS049925).

57. The Examiner rejected the claims as failing to meet the written description requirement of 35 U.S.C. § 112:

2. Claims 1-71 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites "electrical signal to convey distinguishing information about the piece of terminal equipment even if the piece of terminal equipment is powered-off" and claim 7 disclose "distinguishing information comprises a preprogrammed pattern".

The specification discloses in [0010], "The power signal to the communication device may also be fluctuated to provide useful information, such as status information, to the communication device".

The specification lacks how to make the power signal to convey distinguishing information about the terminal equipment. Merely stating power signal fluctuation can be used to convey useful information does enable one skilled in the art to make the pertain invention.

The description also lacks how to make the power signal fluctuation to associate with a preprogrammed pattern to provide the distinguishing information when even the piece of terminal equipment is powered-off.

'107 Prosecution History at 970-71 (CMS050854–55).

58. The Examiner's rejection noted that the specification did not disclose how a power signal would be fluctuated to provide distinguishing information about the piece of terminal equipment.

59. In response, the applicants cancelled all the claims and submitted new claims starting with claim 72, reproduced below:

> 72. (New) An identifiable piece of Ethernet terminal equipment comprising:
>
> an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals,
>
> at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts,
>
> the piece of Ethernet terminal equipment *to draw current via the at least one path* wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment.
>
> '107 Prosecution History at 1047 (CMS050931) (emphasis added).

60. The claimed Ethernet terminal equipment includes at least two pairs of contacts, and a path coupled across at least one contact of each pair. At this point in the claim, all that is disclosed is a topology structure, namely a path that couples between at least one contact in each of two pairs of contacts. There is not yet any claim element indicating whether or what current is or is not present in the path.

61. However, claim 72 further requires that the piece of Ethernet terminal equipment is "to draw current via the at least one path" and that that current "comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment." These are functional limitations; i.e. they are defined solely by the function that is to be performed by the previously recited structure.

62. Applicants' remarks accompanying claim 72 and its dependents are provided in full below:

Notwithstanding, Applicant notes that newly presented Claims 72 - 163 now claim first and second pairs of contacts of an Ethernet connector used to carry Ethernet communication signals and at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts. The at least one of the contacts of the first pair and the at least one of the contacts of the second pair referred to as the recited contacts. The identifiable piece of Ethernet terminal equipment to draw current via the at least one path coupled across the recited contacts wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment. Support for the presently claimed subject matter can be found throughout the originally filed specification and drawings of the present application, including Paragraphs [0002], [0008], [0041], [0052] and Figure 8. Reconsideration and withdrawal of the present rejection are requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-71 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Davis et al. (U.S. Pat. No. 5,754,764) in view of Blair et al. (U.S. Pat. No. 5,586,273). This rejection is respectfully traversed.

At the outset, Applicant notes that by way of the present Amendment, Claims 1-71 have been cancelled, thereby rendering this rejection moot. Notwithstanding, in an attempt to expedite prosecution, Applicant submits the following comments in connection with Davis et al. and Blair et al.

Specifically, Applicant submits that Davis et al. merely teach that input/output and local area network functions are combined into a single integrated circuit on a single semiconductor. Local area network circuitry and input and output circuitry are both coupled to at least one host system via a common data bus. (Abstract) In some embodiments, Ethernet communications are employed.

However, it should be abundantly clear that Davis et al. are completely silent with regard to "an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals", the recited contacts of the Ethernet connector (i.e., "at least one path coupled across at least one of the contacts of the first pair of contacts of [the Ethernet connector] and at least one of the contacts of the second pair of contacts [of the Ethernet connector]"), "the piece of Ethernet terminal equipment to draw current via the at least one path [coupled across the recited contacts] wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment" as presently claimed. That is, although Davis et al. note usage of an Ethernet network, Davis et al. are completely silent with

regard to using the at least one path coupled across contacts used to carry Ethernet communication signals, and to draw current via the at least one path coupled across the recited contacts wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment.

Similarly, Blair et al., like Davis et al., merely teach a synchronous communication protocol between synchronous application programs. The Examiner relies on Blair et al. for teaching an RJ45 connector. To this end, Blair et al., *in toto*, states that "the connector 62 is the ISDN standard connector RJ45." Col. 8, lines 47-48. However, Blair et al. are unable to cure the deficiencies of Davis et al. and are completely silent with regard to using the recited contacts of the Ethernet connector, which are also used to carry Ethernet communication signals, to couple a path across to draw current wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment.

For at least these reasons, Davis et al. and Blair et al., singly or in combination, fail to teach or suggest the claimed invention. Reconsideration and withdrawal of this rejection are requested.

'107 Prosecution History at 1065-67 (CMS050949–51).

63. Applicants distinguished over Davis explaining that the claims as amended require "*using* the at least one path coupled across contacts used to carry Ethernet communication signals, and *to draw current via the at least one path* coupled across the recited contacts wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment." (emphasis added)

64. Applicants again focused on using the path to draw current when distinguishing the combination of Davis and Blair (conceded as including an Ethernet connector) because Blair allegedly also fails to disclose "*using* the recited contacts of the Ethernet connector, which are also used to carry Ethernet communication signals, to couple a path across *to draw current* wherein the current comprises information to identify the piece of Ethernet terminal equipment." *Id*. (emphasis added)

65. Consistent with the remarks, the claims were not amended using the terms "operable to", "capable of", or "configured to." Instead, the functions performed by the Ethernet equipment are defined using the infinitive "to draw [] current."

66. Dependent claims 92 and 107 were introduced at the same time as independent claim 72, all reproduced below:

> 72. (New) An identifiable piece of Ethernet terminal equipment comprising: an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals, at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts, the piece of Ethernet terminal equipment to draw current via the at least one path wherein the current comprises information to identify the piece of Ethernet terminal equipment as a particular piece of Ethernet terminal equipment.
>
> ---
>
> 92. (New) The identifiable piece of Ethernet terminal equipment of claim 72 wherein the piece of Ethernet terminal equipment to draw different magnitudes of current via the at least one path.
>
> ---
>
> 107. (New) The identifiable piece of Ethernet terminal equipment of claim 72 wherein the current comprises DC current.

'107 Prosecution History at 1047 (CMS050931), 1050 (CMS050934), 1053 (CMS050937).

67. The Examiner rejected claims 72, 92, and 107 (among others) in view of U.S. Patent No. 5,923,663 ("Bontemps") and in combination with the '260 patent. '107 Prosecution History at 1097–1101 (CMS050981–85).

68. However, the Examiner indicated that then pending claims 93-96, 147-149, and 163 would be allowable if rewritten in independent form including all of the limitations. Those claims are reproduced below:

93. (New) The identifiable piece of Ethernet terminal equipment of claim 92 wherein at least two different magnitudes of the current comprise the information to identify the piece of Ethernet terminal equipment.

94. (New) The identifiable piece of Ethernet terminal equipment of claim 92 wherein the different magnitudes of current comprise a series of magnitudes.

95. (New) The identifiable piece of Ethernet terminal equipment of claim 92 wherein the different magnitudes of current occur at regular intervals.

96. (New) The identifiable piece of Ethernet terminal equipment of claim 92 wherein the different magnitudes of current result from at least one condition applied to the contacts of the Ethernet connector.

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147. (New) The identifiable piece of Ethernet terminal equipment according to claim 72 wherein the current comprises a first magnitude of current for a first interval followed by a second magnitude of current for a second interval wherein the second magnitude is greater than the first magnitude.

148. (New) The identifiable piece of Ethernet terminal equipment according to claim 147 wherein at least one of the first and second magnitudes of current identifies the piece of Ethernet terminal equipment.

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149. (New) The identifiable piece of Ethernet terminal equipment of claim 72 wherein a magnitude of the current is part of a detection protocol.

---

163. (New) The identifiable piece of Ethernet terminal equipment according to claims 72 through 162 wherein the current comprises information to identify the piece of Ethernet of terminal equipment as a particular piece of Ethernet terminal equipment with the piece of Ethernet terminal equipment powered-off.

'107 Prosecution History at 1051 (CMS050935), 1059-60 (CMS050943–44), 1062 (CMS050946).

69. Each of the allowable dependent claims require "current" to be present. Claim 93 requires at least two different magnitudes of current. Claim 95 requires different magnitudes of current at regular intervals. Claim 96 requires current resulting from at least one condition applied. Claim 147 requires different magnitudes of current with the larger magnitude occurring second. Claim 148 requires two magnitudes of current, one of which identifying the device. Claim 149 requires a magnitude of current being part of a detection protocol. Claim 163 requires current comprising information.

70. The Examiner deemed these claims allowable not because of any structural limitations in the claim. Rather, they were allowed due to specific limitations requiring current flowing in the accused products.

71. Applicants further amended claim 72 as shown below:

> 72. (Currently amended) ~~An identifiable~~ A piece of Ethernet terminal equipment comprising:
>
> an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals, at least one path for the purpose of drawing DC current, the at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts, the piece of Ethernet terminal equipment to draw different magnitudes of DC current flow via the at least one path, the different magnitudes of DC current flow to result from at least one condition applied to at least one of the contacts of the first and second pairs of contacts, wherein at least one of the magnitudes of the DC current flow to convey ~~comprises~~ information ~~to identify~~ about the piece of Ethernet terminal equipment ~~as a particular piece of Ethernet terminal equipment~~.

'107 Prosecution History at 1151 (CMS051035) (edits in original).

72. In response to the Examiner's rejections in view of Bontemps and the '260 patent, the applicants added that the "piece of Ethernet terminal equipment to draw current" would also draw "different magnitudes," that the current was "DC", and there was current "flow."

73. The word "flow" was correspondingly added three times in the claim for the functional limitations. As shown above, the inclusion of "flow" was a deliberate choice, added for the first time in the claims in this amendment.

74. The addition of "for the purpose of drawing DC current" provides an intended use for the path, namely, to draw DC current.

75. "Flow" was added to the existing word "current" to impart a different meaning than merely "for the purpose of drawing DC current." It connotes that current is actually flowing.

76. This is further confirmed by the context in which the term "current flow" is used. Consistent with the earlier explications of the need to use the path to draw current in accordance with the asserted invention, the Ethernet terminal equipment was amended "to draw different magnitudes of DC current flow," different magnitudes of current flow "result from at least one condition applied," and further that at least one of the magnitudes of DC current flow to convey information."

77. The changes from "to draw current" to "to draw different magnitudes of DC current flow," from "current comprises information" to "DC current flow to convey information," and the addition of "at least one condition applied" all confirm that specific actions are required by the claims.

DISPUTED PHRASES

(A) The Use of the Infinitive "To ___"

78. The following phrases in the asserted claims of the Patents-in-Suit use the infinitive "to ___": "to draw different magnitudes of DC current flow"; "to detect at least two different magnitudes of the current flow"; "to detect current flow"; "to detect different magnitudes of DC current flow"; "to detect distinguishing information within

the DC current"; "to distinguish one end device from at least one other end device"; "to distinguish one network object from at least one other network object"; "to distinguish the piece of Ethernet terminal equipment from at least one other piece of Ethernet terminal equipment"; "to distinguish the powered-off end device from at least one other end device"; "to distinguish the piece of BaseT Ethernet terminal equipment from at least one other piece of BaseT Ethernet terminal equipment"; "to control application of at least one electrical condition"; "to control application of the at least one DC power signal"; "to convey information about the piece of Ethernet terminal equipment"; "to convey information about the powered-off end device"; "to provide at least one DC current"; and "to result from at least one condition applied to."

79. The prosecution history of the '107 patent demonstrates that the use of "to ___" for these limitations and "current flow" (as opposed to "current") in the claims of the '107 patent and continuation '838 and '760 patents requires that the functional acts must be performed, as opposed to only being capable of being performed.

80. The asserted independent claims of the '107, '760, and '838 patents are reproduced below with the infinitive "to ____" clauses shown below in italics for context.

> 1. A piece of Ethernet terminal equipment comprising:
>
> an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals,
>
> at least one path for the purpose of drawing DC current, the at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts,
>
> the piece of Ethernet terminal equipment *to draw different magnitudes of DC current flow via the at least one path*, the different magnitudes of DC current flow *to result from at least one condition applied to at least one of the contacts of the first and second pairs of contacts*,
>
> wherein at least one of the magnitudes of the DC current flow *to convey information about the piece of Ethernet terminal equipment*.
>
> 104. A powered-off end device comprising:
>
> an Ethernet connector comprising first and second pairs of contacts,
>
> at least one path for the purpose of drawing DC current, the at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts,
>
> the powered-off end device *to draw different magnitudes of DC current flow via*

the at least one path,

the different magnitudes of DC current flow *to result from at least one condition applied to at least one of the contacts of the first and second pairs of contacts*,

wherein at least one of the magnitudes of the DC current flow *to convey information about the powered-off end device*.

'107 patent, claims 1, 104.

1. A BaseT Ethernet system comprising:

a piece of central BaseT Ethernet equipment;

a piece of BaseT Ethernet terminal equipment;

data signaling pairs of conductors comprising first and second pairs used to carry BaseT Ethernet communication signals between the piece of central BaseT Ethernet equipment and the piece of BaseT Ethernet terminal equipment,

the first and second pairs physically connect between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment,

the piece of central BaseT Ethernet equipment having at least one DC supply,

the piece of BaseT Ethernet terminal equipment having at least one path *to draw different magnitudes of current flow* from the at least one DC supply through a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair,

the piece of central BaseT Ethernet equipment *to detect at least two different magnitudes of the current flow through the loop* and *to control the application of at least one electrical condition to at least two of the conductors*.

73. A BaseT Ethernet system comprising:

Ethernet cabling having at least first and second individual pairs of conductors used to carry BaseT Ethernet communication signals, the at least first and second individual pairs of conductors physically connect between a piece of BaseT Ethernet terminal equipment and a piece of central network equipment;

the piece of central network equipment having at least one DC supply,

the piece of BaseT Ethernet terminal equipment having at least one path *to draw different magnitudes of current flow* via the at least one DC supply through a loop formed over at least one of the conductors of the first pair of conductors and at least one of the conductors of the second pair of conductors, the piece of central network equipment *to detect at least two different magnitudes of current flow through the loop*.

'760 patent, claims 1, 73.

1. A central piece of network equipment comprising:

at least one Ethernet connector comprising first and second pairs of contacts used to carry BaseT Ethernet communication signals; and

the central piece of network equipment *to detect different magnitudes of DC current flow via at least one of the contacts of the first and second pairs of contacts* and

to control application of at least one electrical condition to at least one of the contacts of the first and second pairs of contacts in response to at least one of the magnitudes of the DC current flow.

'838 patent, claim 1

81. The infinitive "to ___" is used in the claims shown above to identify the function to be performed by the claimed Ethernet terminal equipment, end device, and central piece of network equipment.

82. Mr. Baxter concedes that these clauses specify a function. Baxter Decl. at ¶ 16. Mr. Baxter also concedes that "current" and "current flow" do not constitute structure in the claims. Baxter Decl. at ¶ 64.

83. I agree with Mr. Baxter to the extent that the claim language "at least one path coupled across [claimed contacts] for the purpose of drawing DC current" alone does not require current to be flowing through the path. *Id*. The "path coupled across" and related limitations provide the claimed structure necessary for current flow.

84. However, Mr. Baxter is incorrect that "claim 1 merely requires a path that is configured to draw DC current." Baxter Decl. at ¶ 65.

85. With respect to claim 1 (then pending claim 72) of the '107 patent, Applicants' remarks to overcome the cited Blair and Davis prior references twice explained that the claims as amended allegedly overcame the prior art because "although Davis et al. not usage of an Ethernet network, Davis at al. are completely silent with regard to *using* the at least one path coupled across contacts to carry Ethernet communication signals, and *to draw current* via the at least one path coupled across the recited contacts …." '107 Prosecution History at 1066-67 (CMS050950–51) By both amending the claim to require action and arguing that that action (the drawing of current) was not present in the cited prior art, the applicants made it clear that actual current (current flow) was required in the claim.

86. Applicants further amendment of claim 72 adding the requirement that the current results from a condition applied and the addition of the word "flow" after "current" for all the functional claim limitations further clarifies that performance of the actions is required. The addition of the word "flow" was deliberate and suggests a

different meaning for "current" and "current flow." Specifically, "current flow" is suggesting that the current is actually flowing.

87. Applicants also amended the claims to add "for the purpose of drawing DC current" for the path. Where applicants wanted to assert an intended use or capability to perform an action, for example, they drafted the claim language accordingly. Mr. Baxter does not suggest any change in the configuration or design of the path to allow it to do the rudimentary task of "drawing DC current"

88. In view of the remarks in the prosecution history, amendment of the claims to add "flow," and functional limitations being tied to the claimed device itself, Applicants make it clear that the infinitive phrases "to ____" should be interpreted to require that the specified functional limitations are actually performed.

89. For example, claim 1 of the '107 patent (then pending claim 72) was amended to add specific functional limitations tied to actions that would only occur when current is present:

> 72. (Currently amended) ~~An identifiable~~ A piece of Ethernet terminal equipment comprising:
>
> an Ethernet connector comprising first and second pairs of contacts used to carry Ethernet communication signals, at least one path for the purpose of drawing DC current, the at least one path coupled across at least one of the contacts of the first pair of contacts and at least one of the contacts of the second pair of contacts, the piece of Ethernet terminal equipment to draw different magnitudes of DC current flow via the at least one path, the different magnitudes of DC current flow to result from at least one condition applied to at least one of the contacts of the first and second pairs of contacts, wherein at least one of the magnitudes of the DC current flow to convey ~~comprises~~ information ~~to identify~~ about the piece of Ethernet terminal equipment ~~as a particular piece of Ethernet terminal equipment~~.

'107 Prosecution History at 1151 (CMS051035).

90. This claim is directed to Ethernet terminal equipment comprising structural limitations provided by the Ethernet connector and path coupled across the claimed contacts of the Ethernet connector. This path already has the ability to draw DC current as evidenced by its intended use.

91. The remainder of the limitations recite what actions the clamed Ethernet terminal equipment must do with that structure. Specifically, while the structure is already provided for drawing DC current via the path coupled across, the acts of drawing different magnitudes of DC current due to a condition applied and in which one magnitude conveys information about the Ethernet terminal equipment must occur.

92. Mr. Baxter asserts that each instance of "to __" be construed to read in "configured to" or "designed to" perform the function recited in the claim. Baxter Decl. at ¶ 16. In doing so, he is merely rewriting the claims to suit his needs. Had this been the intent, the drafter of the claims could easily have used the appropriate language.

93. Mr. Baxter's interpretation renders "the piece of Ethernet terminal equipment to draw different magnitudes of DC current flow via the at least one path, the different magnitudes of DC current flow to result from at least one condition applied to at least one of the contacts of the first and second pairs of contacts, wherein at least one of the magnitudes of the DC current flow to convey information about the piece of Ethernet terminal equipment" superfluous.

94. One of ordinary skill in the art would know that the "path coupled across" inherently possesses the ability to draw DC current (including different magnitudes of DC current) when connected, to have the magnitude of DC current measured, and to be affected in accordance Ohm's law. Ethernet terminal equipment already including the path coupled across does not add any further configuration or design already present in the path itself.

95. The functions were provided overcome the prior art without imparting any additional structure to the claim, "flow" was added, and the remarks by the Applicant make it clear that "to ____" requires the actions to be performed.

(B) Current / Current Flow

96. Mr. Baxter and I agree regarding the definition of "current" as a flow of electrons (or electric charge). We also agree that the use of "current" and "current flow" in the patents generally refers to direct current (DC), as opposed to alternating current (AC). Baxter Decl. at ¶¶ 57, 59.

97. Mr. Baxter asserts that "current" and "current flow" mean the same thing. Baxter Decl. at ¶ 57. His argument is that because "current" and "current flow" are both preceded by "DC," they are both "being used in connection with direct current." Baxter Decl. at ¶¶ 61-63. I agree that "current" and "current flow" both refer to direct current (DC) in the asserted claims.

98. However, from the fact that both "current" and "current flow" are preceded by DC as a modifier, Mr. Baxter wrongly concludes: "Thus, a person of ordinary skill in the art would understand that the terms 'current' and 'current flow' to mean the same thing in the context of the claims, namely a flow of electric charge." Baxter Decl. at ¶ 63. Mr. Baxter's conclusion does not logically follow and fails to consider the manner in which "flow" was added in the prosecution history.

99. As noted above, "flow" was deliberately introduced in the claims, which previously only mentioned "current." This addition was made to distinguish the functional limitations (i.e., the actions) that the Ethernet terminal device/end device must perform from the structural limitations (i.e., the Ethernet connector and the path). In this respect, "current flow" connotes that current is actually flowing to satisfy the claim limitation.

100. For example, in contrast with the path's structure having an intended use "for the purpose of drawing DC current," the applicants specifically amended their claims to require that the piece of Ethernet terminal equipment draw different magnitudes of DC current flow via the at least one path.

101. Following Mr. Baxter's logic, the functional limitations in the claims reciting "current flow" become superfluous. The path coupled across has the structure for DC current to flow and is expressly defined with an intended use of drawing DC current. The Ethernet terminal equipment as claimed is already defined to include this path. Applying Mr. Baxter's interpretation, the Ethernet terminal equipment is merely configured (or designed) to draw different magnitudes of DC current flow in response to at least one condition applied to a contact. However, such a capability must already be present in the path through the operation of Ohm's law.

102. Any ambiguity concerning "current flow" is resolved by the prosecution history as discussed above. Applicants specifically added "flow" multiple times for the functional limitations. Applicants explained that the distinction over the prior art was "using" the path to draw current, not any structural difference.

103. The "at least one path" provides the structure to carry a DC current presented from one contact in one pair to another contact in another pair, and that current is governed by Ohm's law. Under the claim language, the Ethernet terminal equipment must have not just the *capability* to draw different magnitudes of DC current, it must actually draw different magnitudes of DC current.

(C) Path Coupled Across

104. The word "path" is used only once in the specification:

> The output of signal modulator 7 is diode OR'd with the output of isolation power supply 8 and then connects to one of the transmit data lines that connect to remote module 16.

> The return path for current from PC 3A is the pair of receive data lines.
>
> '012 Patent, 7:31-53; '107 Patent, 7:37-61.

105. Mr. Baxter does not propose a plain and ordinary meaning of "path." The plain and ordinary meaning of "path" as used in the claims is the route or course over which the signal travels. Specifically, the "path" is the course that the signal travels from one claimed contact to the other claimed contact.

106. Variations of the word "couple" are used 16 times in the specification:

> FIG. 10 is a detailed schematic diagram which illustrates a remote module and a central receiver module **coupled** to a network in accordance with the third embodiment of the present invention.
> '012 Patent, 4:4-7.

> Each pair of transmit and receive wires are internally **coupled** to an associated personal computer via two windings of an internally located isolation transformer (not shown). Each pair of transmit wires and each pair of receive wires thereby form a current loop through one of the personal computers 3A through 3D which is advantageously employed in accordance with the approach described herein.
> '012 Patent, 5:25-32.

> Within central module 15 a, high pass filter 62 prevents the encoded signal from being conducted through the data lines to hub 1. The signal **couples** through transformer 72 to low pass active filter 74 which filters out normal network communications signals. The filtered signal is squared-up by comparator 76 and outputted to Manchester decoder 5.
> '012 Patent, 8:59-65.

> It is also within the scope of the invention to **couple** the signal from the receiver data lines through an isolating device into a microprocessor wherein the low pass filtering and decoding functions are implemented.
> '012 Patent, 9:14-18.

> The tether 150 includes two conductive lines 152 and 154 **coupled** between a pair of connectors 156 and 158. An attachment status signal is conducted through the conductive lines 152 and 154 for indicating whether the tether 150 remains attached to the protected equipment. The first conductive line 152 includes pads P1 and P2 inline to provide a means of shorting a break in the line. The second conductive line 154 is **coupled** directly between the connectors. An external jumper 160 is connected to the output connector 158 of the tether 150 to complete the electrical connection.
> '012 Patent, 11:26-36.

The system transmits a signal over pre-existing network wiring or cables without disturbing network communications by **coupling** a signal that does not have substantial frequency components within the frequency band of network communications. The system is particularly suitable for high-frequency networks such as Ethernet operating at speeds of 10 megabits per second (Mb/s) and higher. For purposes of this invention the term "high frequency information" means the band of frequencies needed to carry data at 10 Mb/s or more. **Coupling** a lower frequency signal to the data lines of such a network permits increased utilization of the available transmitting medium without a commensurate increase in the cost of the network.
'012 Patent, 11:64-12:9.

Further suppression of harmonics results from the lowpass filtering provided by the resistors used to **couple** the low frequency signal to the data lines acting with the capacitors used for the highpass function mentioned above.
'012 Patent, 12:43-47.

A decoder plug 206 attached to a computer port is electronically **coupled** to the sender tag 202. The decoder plug 206 receives the serial stream, and then converts the serial stream into a signal format that is compatible with the port to which the decoder plug 206 is connected. Although, in the presently preferred embodiment the decoder plug 206 is connected to a computer parallel port 210, the principles of the invention may be readily extended to other types of ports, such as USB, Firewire, keyboard, and serial ports. In addition, the scope of the invention includes **coupling** multiple ID senders 202 to a single decoder plug 206 so that multiple objects can be monitored with the decoder plug 206. Also, connecting multiple decoder plugs 206 in series is within the scope of the invention.
'012 Patent, 13:30-44.

Although the presently preferred embodiment of the invention includes a port reader 218 and a control manager 216, the principles of the invention may be practiced with merely an ID sender tag 202 electronically **coupled** to a decoder plug 206.
'012 Patent, 13:59-63.

The buffered serial stream is **coupled** from the output of the signal receiver 230 to an input of the processor 232 which converts it into a parallel stream. Firmware in the processor 232 implements an ID reader module 236 to provide the conversion function. A tri-state buffer 233 coupled to the processor 232 permits unobstructed passthrough communication from the interface port 210 to a peripheral device **coupled** to the decoder plug 204 through a connector 235.
'012 Patent, 14:64-15:5.

> Continuing to refer to FIGS. 19 a and 20, during network management information mode a network manager determines the location or configuration of assets that are **coupled** to the network by interrogating ID senders 202 and decoder plugs 206 attached to assets.
> '012 Patent, 16:5-9.

> Although, in the preferred embodiment the comparison function of the control manager and database is executed on a network server electronically **coupled** through a network to an ID sender tag 202, the scope of the invention includes conducting the comparison locally on a computer that is being scanned, in a central database over a network, over a corporate intranet, and over the world wide Internet.
> '012 Patent, 16:28-34.

107. Mr. Baxter cites to the McGraw-Hill Electronics Dictionary definition of "coupling." Baxter Decl. at ¶ 89. I agree that "coupling" or "coupled circuit" can be defined as allowing energy transfer between points along the specified path.

108. In the context of the claims, "couple" is used as a verb to connote that a signal will travel along the claimed path from one claimed contact to the other. Applying the definition of "couple" to the claims, an acceptable construction of "path coupled across" is a "path permitting energy transfer between," which uses Mr. Baxter's own definition.

109. However, Mr. Baxter seems to believe that the term "connection" is somehow more restrictive. It appears that he is interpreting that term to require a direct connection (e.g., through a single wire), with no intervening components, such as resistors, inductor windings, etc. Defendants' construction is not so limited. For example, Newton's Telecom Dictionary defines "connection" as "An electrical continuity of circuit between two wires or two units, in a piece of apparatus." There is no restriction, express or implied, about the connection being direct, without intervening devices. All that is required is continuity along the path.

110. Mr. Baxter's statements concerning "an important distinction for devices using DC current, like Power over Ethernet ('PoE') equipment" are irrelevant. Baxter Decl. at ¶ 91. PoE products have nothing to do with the Patents-in-Suit or any aspect of

the intrinsic evidence. This is merely what Chrimar asserts is infringing, and has no bearing on how one would understand the plain meaning of the claim.

111. The configuration suggested by Mr. Baxter in paragraphs 91 and 92 describes passing a DC current through the windings on one side of a transformer. The piece of coiled wire constitutes an electrical connection through which a DC current may travel. Contrary to his assertion, Defendants' proposed construction would not limit the claim to direct electrical connections; as stated above, a connection may be achieved through the winding of a transformer, as he states.

112. Mr. Baxter's proposed use of "coupling" is, in fact, too broad for the context of the Patents-in-Suit. As discussed above, Mr. Baxter and I agree that the use of "current" and "current flow" in the patents refers to direct current (DC), as opposed to alternating current (AC). Baxter Decl. at ¶¶ 57, 59. However, Mr. Baxter's proposed construction using "coupling" would include (according to his own cited definition), "inductive [coupling] through a transformer or choke, or capacitive [coupling] through a capacitor." Baxter Decl. at ¶ 89. DC cannot be inductively coupled through a transformer (mutual inductance), nor can it pass through a capacitor. Indeed, in many places in the disclosed circuits in the patents, capacitors are strategically placed specifically to block DC and contain it within the boundaries of the claimed invention. *See, generally,* Figs. 6, 8, 10.

113. The use of the term "coupling," as defined by Mr. Baxter, would improperly expand the scope of the claim to paths that could convey alternating current as well as direct current.

114. It should be noted that the isolation transformers in Figures 6 and 10 pass a constant net DC current through the secondary wiring of the transformer, which is sent back to the central module via two wires operating as a pair. The amount of DC current on each wire is the total, constant net DC current plus or minus the induction current supplied across the transformer. The changes in current sent across the

magnetic coupling of the transformer themselves are AC signals, but the overall flow of current through the Ethernet connector and wiring will not change in polarity.

(D) Loop Formed Over

115. Claim 1 of the '760 patent recites:

> 1. A BaseT Ethernet system comprising:
>
> a piece of central BaseT Ethernet equipment;
>
> a piece of BaseT Ethernet terminal equipment;
>
> data signaling pairs of conductors comprising first and second pairs used to carry BaseT Ethernet communication signals between the piece of central BaseT Ethernet equipment and the piece of BaseT Ethernet terminal equipment,
>
> the first and second pairs physically connect between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment,
>
> the piece of central BaseT Ethernet equipment having at least one DC supply,
>
> the piece of BaseT Ethernet terminal equipment having at least one path to draw different magnitudes of current flow from the at least one DC supply through a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair,
>
> the piece of central BaseT Ethernet equipment to detect at least two different magnitudes of the current flow through the loop and to control the application of at least one electrical condition to at least two of the conductors.

116. Mr. Baxter asserts that "loop" is "a round trip path formed over [the claimed contacts]." Baxter Decl. at ¶ 78. Mr. Baxter asserts that "the only limitation in the loop as stated in the asserted claims is that the loop is formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair when the first and second pairs are physically connected between the piece of BaseT Ethernet terminal equipment and the piece of central BaseT Ethernet equipment." Baxter Decl. at ¶ 82.

117. I fail to see the distinction between a round-trip path and a complete circuit. Newton's Telecom Dictionary defines a "circuit" as "[A] closed path through which current can flow." This seems indistinguishable from a round-trip path, and Mr. Baxter never shows, by example or otherwise, how a "round trip path formed over" is somehow different from a "complete circuit."

118. Mr. Baxter incorrectly asserts that Claim 1 of the '760 patent "merely requires the claimed device be configured to draw different magnitudes of current flow through a loop." Baxter Decl. at ¶ 82. The Claim additionally requires that "the piece of central BaseT Ethernet equipment [] detect at least two different magnitudes of the current flow through the loop … ." '760 Patent, Claim 1.

(E) Powered Off

119. The "powered-off" limitation is introduced in claims 103 and 104 of the '107 patent and claims 72 and 145 of the '760 patent. "Powered-off" in the claims directly modifies the "Ethernet terminal equipment" ("end device" in claim 104 of the '107 patent.) Accordingly, the claims attempt to read on an Ethernet terminal equipment or end device that is powered-off.

120. Mr. Baxter incorrectly asserts, "None of the asserted claims says that no power is applied to the Ethernet terminal equipment or the end device." Baxter Decl. at ¶ 111. In contrast, this is precisely what the claims assert, e.g.:

> "Claim 103: The piece of Ethernet terminal equipment of any one of claims 1, 17, …, wherein the piece of Ethernet terminal equipment is a piece of powered-off Ethernet terminal equipment."

121. The plain and ordinary meaning of "powered-off" is that no power is applied. This is exactly the meaning of "powered-off Ethernet terminal equipment" and "powered-off end device" as used in the claims. There is no ambiguity.

122. Any time there is DC current flowing through real-world components in a piece of Ethernet terminal equipment (or any other device), there is power being drawn

by that device, equal to the square of the current multiplied by the effective impedance (resistance) of the device. That is, $P = I^2 \times R$. Such a device is not powered-off, it is in fact consuming power (regardless of the level of power consumed).

123. Mr. Baxter instead asserts that "powered-off" means "without its operating power." Baxter Decl. at ¶¶ 108, 109, 112. To the extent that his construction is directed to the claim limitations recited, he offers a distinction without a practical difference. The operation being performed by the Ethernet terminal equipment (and end device) is that of drawing different magnitudes of DC current. That operation requires power in order to be performed. A device "without its operating power" is a device without the power necessary to perform the claimed function.

124. Such a claim can never be infringed because there will be no DC current flow when the device is "powered-off" (under either a construction of "without power applied" or "without its operating power"). Notwithstanding the poor drafting of these claims, this is their plain meaning. Neither Mr. Baxter or myself is allowed to rewrite this unambiguous claim language.

125. It appears that Mr. Baxter's reading of "powered-off" requires an additional, unclaimed power source that its present somewhere, and which provides "operating power", but which is turned off at the time the claim is infringed. In other words, "powered-off" according to Mr. Baxter does not apply to any of the claim limitations recited to be part of the Ethernet terminal equipment (or end device).

126. There is no antecedent basis in the claims for such a separate source of "operating power." Neither the Ethernet terminal equipment nor the end device are claimed to include a separate source of power beyond the drawing of current recited in the claims. For example, the Ethernet terminal equipment (or end device) as claimed does not recite one portion operable with power from one source, and another portion that is "powered-off."

127. A person of ordinary skill in the art would not interpret the claims to require an unwritten claim limitation that is both present and non-operational. Nothing about Ethernet terminal equipment or end devices inherently require a second source of power.

128. Mr. Baxter's interpretation renders "powered off" superfluous to the actual elements of the claim, because it has no application to any recited elements defined to be part of the "powered-off Ethernet terminal equipment (or end device)."

128. The difficulty with Mr. Baxter's interpretation arises from the fact that the patent specification envisions an environment where there is a remote module that is receiving power from a central module, for the purpose of either sending information to the remote module, or receiving identifying information from the remote module. The remote module is attached to an asset being tracked, which presumably is powered from another source, e.g., an AC mains power line. In such an environment, it may be possible for the remote module to be consuming power while the asset being tracked is "powered off." However, this is not what is claimed, and it is impermissible to read any limitations of the specified embodiment into the claim language. What is claimed is a piece of Ethernet terminal equipment (or end device) that is powered-off, not an asset attached to a piece of Ethernet terminal equipment that is powered off.

129. Mr. Baxter's citations to the specification fails to provide a basis for rewriting the claim language. In all of the citations listed in Baxter Decl. ¶ 109, the device without the operating power is the *asset to be tracked*, which in these embodiments is shown as a separate component from the remote module, notwithstanding the fact that it is physically connected to the asset.

130. The configuration taught by the patent specification serves a particular purpose; the asset, such a laptop computer, can be employed without any modifications to its internal structure, yet still be monitored by the external remote module. The remote module is the add-on device that needs to be powered and sends a unique

identifier. Indeed, it is a purported benefit of the invention that the asset can be turned off, while the remote module provides the tracking capability. However, the operation of the purported invention (the features of the claimed remote module) are the same whether the asset is powered-on or powered-off and whether or not Ethernet communications are being sent. In all of these cases, the remote module is receiving its power from the central module.

131. Claim 103 of the '107 patent and claims 72 and 145 of the '760 patent address the claimed Ethernet terminal equipment. Claim 104 calls for an "end device." Both are claimed to draw DC current as supported by the specification. However, in an effort to try to draft claims that read on Power-over-Ethernet (PoE) powered devices, the applicants overreached by drafting claims that are not supported by the specification and that cannot, in fact, be infringed.

132. Whether the "asset" is powered-on or powered-off is of no consequence to the claim language. The claims are unambiguous with respect to the meaning of "powered-off Ethernet terminal equipment" and "powered off end device."

(F) Condition Applied

133. As discussed above, the prosecution history of the '107 patent confirms that several functions of the "Ethernet terminal equipment" and "end device" need to be performed. One such function is that the different magnitudes of DC current "result from at least one condition applied to the contacts."

134. The plain meaning of "condition applied" is simply to do something to the contacts. This leaves no perceivable boundary as to what constitutes a "condition." One of ordinary skill in the art would not know whether it meant:

- An electrical (voltage, current, impedance) condition as contended by Mr. Baxter;
- A temperature condition (it is indeed possible to cause the magnitude of the current drawn to change as a function of temperature);
- A mechanical change applied to the connector contacts so as to change the current flow, etc.

135. There is no reason to presume, as Mr. Baxter does, that the condition applied must be electrical. The fact that certain dependent claims recite voltage conditions or impedance conditions does nothing to limit the original recitation of "condition" to merely an electrical condition. As written, it would be unclear how one would determine the bounds of the claims to evaluate what you can or cannot do to the contacts to yield different magnitudes of DC current. The claims are indefinite because a person of ordinary skill in the art would not know what "condition applied" encompasses.

136. As discussed above, Ohm's law already inherently provides for achieving different magnitudes of current flow by applying different voltages to the contacts of the connectors in the path. Alternatively, thermodynamic changes can affect the impedance of the paths—e.g., by simply waiting for the weather to change, the magnitudes of DC current will change to some degree.

137. To the extent that a "voltage condition" is applied to the contacts, a person of ordinary skill in the art would understand what is required because it is a clear application of Ohm's law to a recited element of the claim.

138. The principle of claim differentiation demands that "condition" be read as being broader than "electrical condition." Claim 61 of the '107 patent recites "[t]he piece of Ethernet terminal equipment of claim 1 wherein the at least one path is a function of at least one *electrical condition* across the at least one of the contacts …" (emphasis added). If the "condition" recited in Claim 1 is already interpreted as an "electrical condition", then Claim 61 provides no new limitation and is rendered invalid. Thus, the

"condition" of Claim 1 must be broader than merely an "electrical condition," yet no guidance is given as to how broad it actually is, or what scope of conditions it covers.

139. In addition, Claim 80 of the '107 patent recites "[t]he piece of Ethernet terminal equipment of Claim 79 wherein the electrical component is responsive to an *electrical condition* across the contacts of the Ethernet connector." (emphasis added) Claim 79 is directly dependent on Claim 1, which recites "at least one condition applied to at least one of the contacts." If "condition applied" meant "electrical condition applied," then Claim 80 would include no new limitation over Claim 79, and would therefore be invalid. Under the principle of claim differentiation, therefore, "condition applied" in Claim 1 must be broader than "electrical condition applied."

140. Mr. Baxter asserts that the word "electrical" should be added to the claim. He does not explain why the intrinsic evidence would authorize reading in this new limitation. Nor does he reconcile this with dependent claims 61 and 81, which adds the limitation of "electrical condition."

(G) Part of a Detection Protocol

141. Numerous dependent claims assert that a current or impedance is part of a detection protocol. Such a determination is completely subjective. The value measured is only significant if a person decides to ascribe a meaning to it.

142. A person of ordinary skill in the art would have no way of determining, nor have any control over, whether the amount of current drawn or the impedance within a device is ascribed a particular meaning by one of the billions of people on earth.

143. Mr. Baxter asserts that "detection protocol" means that the equipment is configured or designed so that the magnitude of the current (flow) or the impedance of the path allow it to detect or determine some information about equipment at the other end of the device. Baxter Decl. at ¶ 74.

144. First, the detection protocol is directed to a magnitude of current or an impedance, not a piece of equipment. Moreover, his interpretation appears to be subjective concerning whether someone choses to use this magnitude for a reason (i.e., as part of a detection protocol), or whether it is of no consequence; the inherent ability to measure a current or impedance may provide a numerical value, but whether this value is part of a detection protocol is subject to the specifications (or whims) of some other individual or organization.

145. In particular, it is possible that at the time of design or manufacture of a piece of Ethernet terminal equipment, a given magnitude of current or impedance may be of no particular consequence. It is not measured, or used to characterize the device. Under Plaintiffs' interpretation, this device would not infringe since the equipment was not "configured or designed so that the magnitude of the current (flow) or the impedance in the path allow[s] it to detect or determine some information about the equipment at the other end of the path." Baxter Decl. at ¶ 74. At some later date, unbeknownst to the designer or manufacturer of the device, an individual or organization may now chose to characterize that device by the current or impedance that was previously of no import. Under Plaintiffs' interpretation, this previously non-infringing device has now magically become infringing, since it is now configured so that the magnitude of current or impedance is ascribed a meaning with regard to the piece of equipment.

146. This leaves designers with a predicament; they have no guidance as to how to avoid infringement of the claims, since they have no way of knowing if someone will ever determine information about their equipment from one of the multitudes of currents and impedances present within it. A person of ordinary skill would have no way of knowing, at the time of design or manufacture of a piece of equipment, whether it would or would not infringe, particularly with respect to a detection protocol that may be conjured up at a later time by a different party.

(H) BaseT

147. Mr. Baxter claims that a person of ordinary skill "would understand that the term 'BaseT' as used each claim [sic] is actually BaseT Ethernet and has its plain and ordinary meaning, namely "twisted pair Ethernet per the IEEE 802.3 Standards." I disagree with Mr. Baxter on this point.

148. First, as discussed above, there is no plain and ordinary meaning of "BaseT" or "BaseT Ethernet." The terms do not appear in any of the specifications of the Patents-in-Suit, including the '260 patent incorporated by reference. They also do not appear in any of the IEEE 802.3 Standards. The terms appear to be made up by the Applicants without providing any clear definition. While they appear in numerous *claims*, a person of ordinary skill would not understand the scope of the term beyond the sole system disclosed, i.e., 10BASE-T. '012 Patent, 12:13-14.

149. Mr. Baxter attempts to define "BaseT" as "twisted pair Ethernet per the IEEE 802.3 Standards (e.g., 10BaseT/IEEE 802.3i, 100BaseTX/IEEE 802.3u, and 1000BaseT/IEEE 802.3ab [sic])." Baxter Decl. at ¶ 98. However, even this definition is vague, as there are numerous uses of twisted pair cable in Ethernet beyond those alluded to, and it is not at all clear whether the described system could even operate on them, e.g.:

- 1BASE5: Ethernet operating at 1 Mb/s, using a *single unshielded twisted pair*.[4]
- AUI (part of 10BASE 5): Ethernet operating at 10 Mb/s using 4 shielded twisted pairs.
- 100BASE-T4: Ethernet operating at 100 Mb/s using 4 unshielded twisted pairs, but in an unusual asymmetrical configuration.
- 100BASE-T2: Ethernet operating at 100 Mb/s using 2 unshielded twisted pairs (with a more complex encoding scheme than is used in 100BASE-TX or 100BASE-T4).

[4] The system disclosed in the patents-in-suit all use two twisted pairs to deliver DC current and

- 10GBASE-T: Ethernet operating at 10,000 Mb/s using 4 pairs of Category 6a or better cabling.

150. Mr. Baxter minimally attempts to include 100BASE-TX and 1000BASE-T in his definition, yet these systems use considerably lower signal levels and more complex encoding schemes than 10BASE-T. *See, generally*, IEEE 802.3. While the teachings of the Patents-in-Suit (including the '260 patent incorporated by reference) may be able to operate in the relatively high-noise-margin environment of 10BASE-T, there is nothing in the specification that indicates the system would be operational in either a 100BASE-TX or 1000BASE-T environment without significant disruption of the Ethernet communications. In particular, 1000BASE-T uses a complex encoding scheme that operates at 250 Mb/s per pair, in a bi-directional manner. It is quite sensitive to disturbances on the Ethernet cable, and requires very careful installation and component selection, even without the intrusion of the system described in the patent specifications.[5]

151. 1000BASE-T was not even formally adopted by the IEEE at the time of the filing of the provisional patent application (April 10, 1998). While the specification was available in draft form, many details and features of the standard were unsettled and remained subject to change before final approval. Even if it were at all possible for the system described in the patents to operate in a 1000BASE-T environment, a person of ordinary skill would not assume this to be true while the specifications of the final standard were still in flux.

152. Had the Applicants wanted to claim that the system disclosed could operate in a 100BASE-TX or 1000BASE-T environment, they could have stated so. Instead, there is support only for the recited 10BASE-T system.

[5] The situation is even worse for 10GBASE-T, which uses Tomlinson-Harashima precoded (THP) Pulse Amplitude Modulation with 16 levels (PAM-16), encoded in a two dimensional pattern and transmitted at 800 Megasymbols/second.

153. As explained above, the term "BaseT" has no meaning to a person of ordinary skill, and it surely cannot include Ethernet standards that were not even adopted at the time of filing.

SUPPLEMENTATION

154. As of today, this declaration represents my best opinion regarding the matters set forth above. In the event such discovery, changes to claim construction, additional data, or testimony are made available, I may find it necessary to revise or supplement my opinions.

Dated: 21 January 2016

Rich Seifert

Exhibit A

Rich Seifert

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Overview

Mr. Seifert has over 45 years of experience in the computer industry, specializing in computer network architecture, systems, and product design. He was one of the original developers of the 10 Mb/s Ethernet technology at Digital Equipment Corporation, and is now President of *Networks and Communications Consulting*, providing services to a wide range of network, semiconductor, and computer systems manufacturers, investors, and users. He taught graduate-level courses at the University of California for over 15 years, has published three best-selling technology treatises, and has chaired and co-authored numerous international standards for computer communications. He has served as a technology consultant and testifying expert to law firms in more than thirty cases over the past fifteen years. He is an advisor to numerous venture capital investors, has founded high-tech companies both in the U.S. and abroad, and has served on the Executive Boards of a number of firms. Mr. Seifert is an attorney, admitted to practice law in California and in the United States District Court for the Northern District of California.

Education

B.E. (E.E.)	City College of New York, 1976
M.S.E.E.	Worcester Polytechnic Institute, 1979
M.B.A.	Clark University, 1984
J.D.	Santa Clara University, 2006 (summa cum laude)

Computer/Communications Industry Work Experience

1987-Present: ***Networks and Communications Consulting*** **(Los Gatos, CA)**
President and Founder

Technical and business consulting to manufacturers, integrators, investors, and users of LAN, semiconductor, internetworking, and computer systems products. More than 200 clients over 20 years, with projects ranging from strategic planning through product design, specification, and training.

1984-1987: ***Industrial Networking, Inc.*** **(Santa Clara, CA)**
Chief Technology Officer

First employee and founding CTO for start-up company developing factory LAN modems, controllers, and systems. Provided technical leadership for firm (over 100 employees), as well as design and implementation of new manufacturing and test processes.

1976-1984: ***Digital Equipment Corp.*** **(Maynard, MA)**
Principal Engineer/Engineering Supervisor/Consulting Engineer

Technical leader for group of engineers developing first commercial Ethernet products. Co-author (with Xerox and Intel Corp.) of industry-standard Ethernet specification. Designed and developed physical channel for 10 Mb/s Ethernet, including serial interface and transceiver silicon. Charter member of IEEE 802 LAN Standards committee, and co-author of IEEE 802.3 Local Area Network Standard.

Rich Seifert, continued

Teaching Experience

1986-2002: ***University of California (Berkeley)***
Graduate level courses on computer network technology.

1999: ***University of California (Santa Cruz)***
Undergraduate level course on business information systems.

1998: ***Oxford University (U.K.)***
Graduate level seminar on computer network technology.

1993-95: ***University of California (Santa Barbara)***
Graduate level seminars on computer network technology.

1987-2002: ***Networks and Communications Consulting***
Nearly 100 public and private seminars delivered on computer network technology, plus videotape sales.

Entrepreneurial Experience

1992-2000: ***Tut Systems*** **(Pleasanton, CA)**
Technical Advisory Board
Helped develop initial business plan, technology validation. Company taken public, subsequently acquired by Motorola.

1997-2005: ***Mysticom, Inc.*** **(Netanya, Israel; Mountain View, CA)**
Founder, Chief Architect, Board of Directors, Technical Advisory Board
Key member of company start-up team. Helped with initial incorporation, financing, business plan, market validation. Company acquired by TranSwitch Corp.

1997-1998: ***Juniper Networks*** **(JNPR; San Jose, CA)**
Member of start-up team. Helped with initial product architecture, market validation. Company taken public.

1997-1998: ***Yago Systems*** **(Sunnyvale, CA)**
Member of start-up team. Helped with technology issues, market validation. Company acquired by Cabletron Systems.

1999-2003: ***Nishan Systems*** **(San Jose, CA)**
Technical Advisory Board
Consulted to executive team on technology issues. Company acquired by McData Corp.

2000-2002: ***JatoTech Ventures*** **(Austin, TX)**
Technical Advisory Board
Evaluated and advised general partners on technology investments.

2000-2003: ***TeraBlaze, Inc.*** **(Cupertino, CA)**
Founder, Chief Architect
Key member of company start-up team. Helped with initial incorporation, financing, business plan, market validation. Company acquired by Agere Systems.

2000-2003: ***Storage Networks*** **(Waltham, MA)**
Technical Advisory Board
Consulted to executive team on technology issues. Company taken public, later dissolved.

2001-2007: ***Silverback Systems*** **(San Jose, CA)**
Technical Advisory Board
Member of company start-up team. Helped arrange financing, consulted on technology issues. Company acquired by Brocade Communications.

2001-2003: ***Cavium Networks*** **(CAVM; San Jose, CA)**
Technical Advisory Board
Member of company start-up team. Consulted on technology issues. Company taken public.

Rich Seifert, continued

Publications

Books:

The All-New Switch Book: The Complete Guide to LAN Switching Technology, John Wiley & Sons, August 2008

The Switch Book: The Complete Guide to LAN Switching Technology, John Wiley & Sons, June 2000

Gigabit Ethernet: Technology and Applications of High Speed LANs, Addison-Wesley, April 1998

The Design and Planning of Enterprise-Wide AppleTalk Internetworks, Apple Computer, 1993

Choosing Between Bridges and Routers, Infonetics Research Institute, 1989 (2nd ed., 1990, 3rd ed. 1991)

Articles and Papers:

The Use of Backpressure for Congestion Control in Half Duplex CSMA/CD LANs, Networks and Communications Consulting Technical Report 15, August 1996

Issues in LAN Switching and Migration from a Shared LAN Environment, Networks and Communications Technical Report 14 (also published by Kalpana, Inc.), November 1995

The Effect of Ethernet Behavior on Networks using High-Performance Workstations and Servers, Networks and Communications Technical Report 13 (also published by Auspex Systems), March 1995

When Worlds Collide, Data Communications, January 1991

Have Remote Bridge Vendors Made a Big Blunder?, Data Communications, April 1991

Ethernet: Ten Years After, *BYTE Magazine*, January 1991

Industry Standards (Author or Co-author):

IEEE 802.3ad: *Link Aggregation*, 1999

IEEE 802.3z: *Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 1000 Mb/s Operation, Type 1000BASE-X*, 1998

IEEE 802.3ac: *Frame Extensions for Virtual Bridge Local Area Networks*, 1998

IEEE 802.3x: *Specification for 802.3 Full Duplex Operation*, 1997

ISO/IEC 8802-3 (IEEE 802.3): *Carrier Sense Multiple Access with Collision Detect (CSMA/CD) Media Access Control Method and Physical Layer Specifications*, 1985, 1989, 1993, 1996 (and supplements)

IEEE 802.3u: *Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T*, 1995

ISO/IEC 10038 (IEEE 802.1D): *Medium Access Control (MAC) Bridges*, 1990, 1993 (and supplements)

IEEE 802: *Overview and Architecture*, 1990

IEEE 802.1E: *System Load Protocol*, 1990

ISO 8802-4 (IEEE 802.4): *Token-passing bus access method and physical layer specifications*, 1985, 1990 (and supplements)

Digital Equipment Corp., Intel Corp., Xerox Corp., *The Ethernet: A Local Area Network,—Data Link Layer and Physical Layer Specifications*, Version 1: September 30, 1980, Version 2: November 1982

Legal Consulting Experience

From 1994–present, served as technology consultant and expert witness in numerous cases (for both plaintiffs and defendants) involving patent infringement, breach of contract/warranty, and tort liability. Services have included: clarifying and interpreting technology details for counsel, preparation of expert declarations and reports, providing testimony (both deposition and open court), and prior art searches. Has also served as Special Master (Sup. Ct., CA) in a high-profile trade secret dispute. In 2006, admitted to the bar in California, and to the Federal bar for the Northern District of California.

Rich Seifert, continued

Legal Cases

1994–95	3Com v. SynOptics Communications Workman, Nydegger & Seeley (Salt Lake City, UT) for Plaintiff 3Com Patent litigation relating to secure Ethernet repeater technology. Provided expert technology consultation. Case settled before deposition or trial.
1996–98	Datapoint v. Intel, et. al. Kenyon and Kenyon (Washington, DC) for Defendant Intel Patent litigation relating to multi-speed Local Area Networks, Ethernet, Fast Ethernet, LAN Bridges, and Auto-Negotiation. Provided expert consultation and testimony at Markman hearing. Summary judgment for client Intel (non-infringement); affirmed on appeal.
1998	Bay Networks Provided expert opinion on the classification of networking products for the Harmonized Tariff Schedule of the European Union (World Customs Organization).
1998	Level One v. SEEQ Fish & Richardson (Menlo Park, CA) for Plaintiff Level One Patent litigation relating to Fast Ethernet Auto-Negotiation and IEEE standards. Provided expert consultation, expert report and deposition testimony. Case settled prior to trial.
1998	Ashraf Dahod v. LANCity Communications (Bay Networks) Weingarten, Schurgin, Gagnebin & Hayes (Boston, MA) for Defendant Bay Networks Patent litigation relating to broadband metropolitan-area network equipment. Provided expert consultation, expert report, and deposition testimony. Trial verdict for client Bay Networks.
1998–00	Accton Technology v. Microlinear Morgan, Miller & Blair (Walnut Creek, CA) for Plaintiff Accton Liability litigation relating to defective Ethernet transceiver components. Provided expert consultation. Case settled before trial.
1999	Texas Instruments v. Hyundai Jones, Day, Reavis & Pogue (Dallas, TX) for Plaintiff Texas Instruments Patent litigation relating to Fast Ethernet, signal encoding, and IEEE standards. Provided expert consultation and expert report. Case settled before trial (in excess of $1B for Plaintiff).
1999	Lucent v. Cisco Systems Weil, Gotshal & Manges (Menlo Park, CA) for Defendant Cisco Systems Patent litigation relating to Virtual LANs, internetworking, etc. (many patents at issue). Provided expert consultation. Case settled before trial.
2000	Nortel Networks v. Optical Networks, Inc. Fenwick & West (Menlo Park, CA) for Defendant Optical Networks Patent litigation relating to redundant fiber ring technology. Provided expert technology consultation. Consulting assignment completed during pendency of case.
2000	Accton Technology v. Valor Electronics Morgan, Miller & Blair (Walnut Creek, CA) for Plaintiff Accton Liability litigation relating to defective Ethernet power converter modules. Provided expert consultation and deposition testimony. Case settled before trial.
2000-01	Intel v. Broadcom Superior Court of California (Santa Clara County) Litigation relating to potential disclosure of trade secrets as a result of hiring employees from a competitor. Served as Special Master to the Court, pursuant to a Preliminary Injunction ruling. Acted as a neutral, technically-knowledgeable third party to monitor work of affected employees to see if trade secret information was being misappropriated. Technologies at issue included Gigabit Ethernet and LAN Switch semiconductors. Provided report to court; case subsequently settled before trial.
2000	Grumman v. 3Com Workman, Nydegger & Seeley (Salt Lake City, UT) for Defendant 3Com Patent litigation relating to internetworking systems architecture. Provided expert consultation. Consulting assignment completed during pendency of case.
2001	Intel Corporation Provided expert consultation to in-house counsel regarding entire portfolio of network-related patents.

Rich Seifert, continued

2001-04 Nortel v. Foundry Networks
Orrick, Herrington & Sutcliffe (Menlo Park, CA) for Defendant Foundry Networks
Patent litigation relating to design of bridges, switches, and routers. Provided expert consultation and expert reports. Case settled before trial.

2001-02 IBM v. Pluris
Wilson, Sonsini, Goodrich & Rosati (Palo Alto, CA) for Defendant Pluris
Patent litigation relating to a variety of internetworking technologies. Provided expert consultation. Case rendered moot by dissolution of Pluris.

2002-04 Connectel v. NMS
Mintz, Levin, Cohn, Ferris, Glovsky & Popeo (Boston, MA) for Defendant NMS
Patent litigation relating to Internet fax technology. Provided expert consultation, expert report, deposition testimony and testimony at Markman hearing. Case settled before trial.

2002-05 Chrimar Systems v. Cisco Systems
Orrick, Herrington & Sutcliffe (Menlo Park, CA) for Defendant Cisco Systems
Patent litigation relating to providing power to Ethernet devices over a communications link. Provided expert consultation, expert reports and affidavits, deposition and hearing testimony. Summary judgment for client Cisco (both non-infringement and invalidity of asserted patent claim).

2005 Connectel v. Cisco Systems
Kirkland & Ellis (San Francisco, CA) for Defendant Cisco Systems
Patent litigation relating to Internet fax technology. Provided expert consultation. Case settled before trial.

2005 Micrel v. Deloitte
Bingham McCutcheon (East Palo Alto, CA) for Defendant Deloitte
Accounting malpractice dispute relating to network semiconductor devices. Provided expert consultation. Consulting assignment completed during pendency of case.

2005-07 Negotiated Data Solutions v. Dell Computer
Greenberg Traurig (Costa Mesa, CA) and Paul Hastings (Palo Alto, CA) for Defendant Dell
Patent litigation relating to Ethernet Auto-Negotiation. Provided expert consultation. Consulting assignment completed during pendency of case.

2005- Marvell v. Broadcom
O'Melveny & Myers (San Francisco, CA) for Defendant Broadcom
Trade secret dispute relating to network semiconductor devices. Provided expert consultation. Case stayed indefinitely due to criminal prosecution of employee involved.

2005-07 L3 Communications v. Reveal Imaging Technologies, Inc.
Mintz, Levin, Cohn, Ferris, Glovsky & Popeo (Boston, MA) for Defendant Reveal
Patent litigation relating to networked airport baggage scanning equipment. Provided expert consultation. Case settled before trial.

2006-07 Network-1 v. D-Link Systems
Christine Yang (Fountain Valley, CA) for Defendant D-Link Systems
Patent litigation relating to providing power to Ethernet devices over a communications link. Provided expert consultation, expert report, deposition testimony. Case settled before trial.

2006-07 Accton Technology v. Centillium Communications
Morgan, Miller & Blair (Walnut Creek, CA) for Plaintiff Accton.
Liability litigation relating to defective network routing semiconductors. Provided expert consultation, declarations. Case settled before trial.

2006-07 Alcatel v. Foundry Networks
Orrick, Herrington & Sutcliffe (Menlo Park, CA) for Defendant Foundry Networks
Patent litigation relating to user authentication for network switches. Provided expert consultation. Case settled before trial.

2006 Antor Media v. Palm Computing
Quinn Emanuel (Redwood Shores, CA) for Defendant Palm Computing
Patent litigation relating to method for data communications. Provided expert consultation. Case settled before trial.

2006- Enterasys Networks v. Foundry Networks
Orrick, Herrington & Sutcliffe (Menlo Park, CA) for Defendant Foundry Networks
Patent litigation relating to Virtual LAN implementation in network switches. Provided expert consultation. Consulting assignment completed during pendency of case.

Rich Seifert, continued

2006-10 Chrimar Systems v. PowerDSine, Chrimar Systems v. D-Link Systems
Orrick, Herrington & Sutcliffe (Menlo Park, CA) for Defendants PowerDSine and D-Link.
Patent litigation relating to providing power to Ethernet devices over a communications link. Provided expert consultation, expert reports, declarations, deposition and hearing testimony. Case settled before trial.

2007 3Com v. Realtek
Simpson Thacher (New York, NY) for Plaintiff 3Com
Patent litigation relating to implementation of host interface in Ethernet and FDDI network products. Provided expert consultation. Consulting assignment completed during pendency of case.

2008-09 Commil v. Cisco Systems
Simpson Thacher (Palo Alto, CA) for Defendant Cisco Systems
Patent litigation relating to partitioning of Wireless LAN devices. Provided expert consultation. Consulting assignment completed during pendency of case.

2008 Epson v. Advanced Micro Devices
Townsend, Townsend and Crew (San Francisco, CA) for Plaintiff/Cross-Defendant Epson.
Patent negotiation relating to Ethernet Auto-Negotiation, Wake-on LAN, Full Duplex Ethernet (many patents at issue). Provided expert consultation.

2008-10 Network Appliance v. Sun Microsystems, Inc.
DLA Piper (Washington, DC) for Defendant Sun Microsystems
Patent litigation relating to Ethernet Link Aggregation. Provided expert consultation. Case settled before trial.

2008-09 Fenner v. 3Com, et. al.
Finnegan, Henderson (Palo Alto, CA) for Defendants D-Link, Extreme Networks, Netgear, ZyXel
Vasquez, Benisek & Lindgren (Lafayette, CA) for Defendants SMC, Enterasys, et. al.
Patent litigation relating to MAC bridging, IP routing, and address lookup algorithms. Provided expert consultation, expert report. Case settled before trial.

2008- Network-1 v. Enterasys, et. al.
Vasquez, Benisek & Lindgren (Lafayette, CA) for Enterasys and Joint Defense
Follow-on case from prior Network-1 v. D-Link, same patent pursued against additional defendants following earlier settlement. Provided expert consultation. Consulting assignment completed during pendency of case.

2009 Fenner v. Dell, et. al.
Weil, Gotshal & Manges (New York, NY) for Defendant Dell Computer
Goodwin, Procter (Washington, DC) for Defendant Hewlett-Packard
Follow-on case from prior Fenner v. 3Com litigation relating to MAC bridging, IP routing, and address lookup algorithms. Provided expert consultation. Consulting assignment completed during pendency of case.

2009 FINoc v. D-Link
Law Offices of Christine Yang for Defendant D-Link
Patent litigation relating to wireless DSL communications systems. Provided expert consultation. Case settled before trial.

2009 United States v. Ge
Swanson & McNamara (San Francisco, CA) for Defendant Yuefei Ge
Criminal prosecution relating to economic espionage and theft of trade secrets. Provided expert consultation. Defendant acquitted on two counts, mistrial (jury deadlock) on three counts.

2009- Zircon v. Stanley
Haynes and Boone (San Jose, CA) for Plaintiff Zircon
Patent litigation relating to algorithms for electronic stud finder. Provided expert consultation. Consulting assignment completed during pendency of case.

2009-10 Optimum Path v. SMC Networks
Vasquez, Benisek & Lindgren (Lafayette, CA) for Defendant SMC Networks
Patent litigation relating to wireless routers. Provided expert consultation. Consulting assignment completed during pendency of case.

2010 Eon v. Verizon
Simpson Thacher (New York, NY) for Defendant Verizon
Patent litigation relating to interactive video networks. Provided expert consultation, expert reports, deposition testimony. Case settled before trial.

Rich Seifert, continued

2010	SynQor, Inc. v. Lineage Power, et. al. Vasquez, Benisek & Lindgren (Lafayette, CA) for Defendants Lineage Power and Cherokee Power Patent litigation relating to switching power systems architecture. Provided expert consultation. Consulting assignment completed during pendency of case.
2011-	Eon v. D-Link Law Offices of Christine Yang for Defendant D-Link Patent litigation relating to interactive video networks. Provided expert consultation. Consulting assignment completed during pendency of case.
2011-	Fujitsu v. D-Link Law Offices of Christine Yang for Defendant D-Link Patent litigation relating to PCMCIA interface adapters. Provided expert consultation. Consulting assignment completed during pendency of case.
2011	Pepper Hamilton LLP Evaluated patent portfolio for client considering acquisition of IP.
2011	VirnetX v. Siemens Pepper Hamilton LLP for Defendant Siemens Patent litigation relating to secure communications systems. Provided expert consultation. Consulting assignment completed during pendency of case.
2011	Chalumeau v. Enterasys, et. al. Vasquez, Benisek & Lindgren for joint defense. Patent litigation relating to Power-over-Ethernet. Provided expert consultation. Consulting assignment completed during pendency of case.
2012	Chrimar v. Avaya, et. al. Crowell & Moring for Defendant Avaya ITC action relating to Power-over-Ethernet. Provided expert consulting. Consulting assignment completed during pendency of case.
2012-	Eon v. FLO TV Simpson Thacher for Defendant FLO TV Patent litigation relating to interactive video networks. Provided expert consultation. Case pending.
2012-13	Eon v. Novatel, et. al. K&L Gates for Defendants Novatel and Enfora. Patent litigation relating to interactive video networks. Provided expert consultation, expert report, and deposition testimony. Case settled before trial.
2012-13	USEI v. Digi Robins, Kaplan, Miller & Ciresi for Defendant Digi, Inc. Patent litigation relating to Ethernet interface design. Provided expert consultation. Consulting assignment completed during pendency of case.
2013	Eon v. Silver Spring Networks SNR Denton for Defendant Silver Spring Networks. Patent litigation relating to wireless telemetry systems. Provided expert consultation. Consulting assignment completed during pendency of case.
2013-	Fenner v. Juniper Networks Irell & Manella, LLP for Defendant Juniper Networks. Provided expert consultation. Case pending.
2013-	USEI v. Xerox Corp. Robins, Kaplan, Miller & Ciresi for Defendant Xerox Corp. Provided expert consultation, expert report. Case settled before trial.
2014	USEI v. Apple Corp. Williams Morgan for Defendant Apple Corp. Provided expert consultation, expert reports. Summary judgment in favor of Defendant Apple.
2014-	Chrimar v. AMX, et al. McDermott, Will & Emery for Defendant AMX. Provided expert consultation. Case pending.
2014-	Net Navigation Systems LLC v. Extreme Networks Vasquez, Benisek, and Lindgren for Defendant Extreme. Provided expert consultation. Case pending.

EXHIBIT B
ADDITIONAL MATERIALS CONSIDERED

The following materials were considered in producing this report.

1. U.S. Pat. No. 8,702,760, issued Dec. 2, 2014 (including Prosecution History). ['012 Patent]
2. U.S. Pat. No. 8,942,107, issued Jan. 27, 2015 (including Prosecution History). ['012 Patent]
3. U.S. Pat. No. 9,019,838, issued Apr. 28, 2015 (including Prosecution History). ['012 Patent]
4. Harry Newton, *Newton's Telecom Dictionary*, 18th ed., CMP Books, 2002.
5. Leonard Crow, *Learning Electricity Fundamentals*, Howard Sams, 1957 [hereinafter "Crow"]
6. Declaration of Les Baxter, Dec. 17, 2015 [hereinafter "Baxter Decl."].
7. Microchip Corp., PIC12C5XX Family Datasheet.